

SEQUENCE LISTING

<110> Chadwick, Brian Paul
Frischauf, Anna-Maria

<120> METHODS AND COMPOSITIONS RELATING TO CD39-LIKE
POLYPEPTIDES AND NUCLEIC ACIDS

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<141> 1999-01-29

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<170> PatentIn Ver. 2.0

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Ala Lys Asp Ser Ile Pro Arg Ser His Trp Lys Lys Thr Pro Val Val	
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cta aag gca aca gca gga cta cgc tta ctg cca gaa cac aaa gcc aag	672
Leu Lys Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu His Lys Ala Lys	
130 135 140	
gct ctg ctc ttt gag gta aag gag atc ttc agg aag tca cct ttc ctg	720
Ala Leu Leu Phe Glu Val Lys Glu Ile Phe Arg Lys Ser Pro Phe Leu	
145 150 155	
gta cca aag ggc agt gtt agc atc atg gat gga tcc gac gaa ggc ata	768
Val Pro Lys Gly Ser Val Ser Ile Met Asp Gly Ser Asp Glu Gly Ile	
160 165 170	
tta gct tgg gtt act gtg aat ttt ctg aca ggt cag ctg cat ggc cac	816
Leu Ala Trp Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly His	
175 180 185 190	
aga cag gag act gtg ggg acc ttg gac cta ggg gga gcc tcc acc caa	864
Arg Gln Glu Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln	
195 200 205	
atc acg ttc ctg ccc cag ttt gag aaa act ctg gaa caa act cct agg	912
Ile Thr Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg	
210 215 220	
ggc tac ctc act tcc ttt gag atg ttt aac agc act tat aag ctc tat	960
Gly Tyr Leu Thr Ser Phe Glu Met Phe Asn Ser Thr Tyr Lys Leu Tyr	
225 230 235	
aca cat agt tac ttg gga ttt gga ttg aaa gct gca aga cta gca acc	1008
Thr His Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr	
240 245 250	
ctg gga gcc ctg gag aca gaa ggg act gat ggg cac act ttc cgg agt	1056
Leu Gly Ala Leu Glu Thr Glu Gly Thr Asp Gly His Thr Phe Arg Ser	
255 260 265 270	
gcc tgt tta ccg aga tgg ttg gaa gca gag tgg atc ttt ggg ggt gtg	1104
Ala Cys Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val	
275 280 285	
aaa tac cag tat ggt ggc aac caa gaa ggg gag gtg ggc ttt gag ccc	1152
Lys Tyr Gln Tyr Gly Gly Asn Gln Glu Gly Glu Val Gly Phe Glu Pro	
290 295 300	
tgc tat gcc gaa gtg ctg agg gtg gta cga gga aaa ctt cac cag cca	1200
Cys Tyr Ala Glu Val Leu Arg Val Val Arg Gly Lys Leu His Gln Pro	
305 310 315	
gag gag gtc cag aga ggt tcc ttc tat gct ttc tct tac tat tat gac	1248
Glu Glu Val Gln Arg Gly Ser Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp	
320 325 330	

cga gct gtt gac aca gac atg att gat tat gaa aag ggg ggt att tta 1296
 Arg Ala Val Asp Thr Asp Met Ile Asp Tyr Glu Lys Gly Gly Ile Leu
 335 340 345 350

aaa gtt gaa gat ttt gaa aga aaa gcc agg gaa gtg tgt gat aac ttg 1344
 Lys Val Glu Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu
 355 360 365

gaa aac ttc acc tca ggc agt cct ttc ctg tgc atg gat ctc agc tac 1392
 Glu Asn Phe Thr Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Ser Tyr
 370 375 380

atc aca gcc ctg tta aag gat ggc ttt ggc ttt gca gac agc aca gtc 1440
 Ile Thr Ala Leu Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val
 385 390 395

tta cag ctc aca aag aaa gtg aac aac ata gag acg ggc tgg gcc ttg 1488
 Leu Gln Leu Thr Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu
 400 405 410

ggg gcc acc ttt cac ctg ttg cag tct ctg ggc atc tcc cat 1530
 Gly Ala Thr Phe His Leu Leu Gln Ser Leu Gly Ile Ser His
 415 420 425

tgaggccacg tacttccttg gagacctgca ttgccaaca cctttttaag gggaggagag 1590

agcacttagt ttctgaacta gtctgggaca tcttggaactt gagcctagag atttaggttt 1650

aattaatttt acacatctaa tgtgaactgc tgccaaacca ctcaagagta cacagctggc 1710

accagagcat cacagagagc cctgtgagcc aaaaagtata gttttggaac ttaaccttgg 1770

agtgaagacc cagggaacagg tccctggaaa ccaaagaaaa atcgcatctt aaccctttga 1830

gtgcctcatt ccaactgaata tttaaatttt cctcttaaatt ggtaaactga cttattgcaa 1890

tocaaagacc catcaatata agtatttttt tcttccttat acagtgcctt gccaccctt 1950

atctgcaccc acctccctg aaaaagagag aaaaaaaaaa aaaaaaaa 1998

<210> 6
 <211> 428
 <212> PRT
 <213> Homo sapiens

<400> 6
 Met Ala Thr Ser Trp Gly Thr Val Phe Phe Met Leu Val Val Ser Cys
 1 5 10 15

Val Cys Ser Ala Val Ser His Arg Asn Gln Gln Thr Trp Phe Glu Gly
 20 25 30

Ile Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Ser Thr Leu
 35 40 45

Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Thr Arg Ile His Val
 50 55 60

Tyr	Thr	Phe	Val	Gln	Lys	Met	Pro	Gly	Gln	Leu	Pro	Ile	Leu	Glu	Gly	65	70	75	80
Glu	Val	Phe	Asp	Ser	Val	Lys	Pro	Gly	Leu	Ser	Ala	Phe	Val	Asp	Gln	85	90	95	
Pro	Lys	Gln	Gly	Ala	Glu	Thr	Val	Gln	Gly	Leu	Leu	Glu	Val	Ala	Lys	100	105	110	
Asp	Ser	Ile	Pro	Arg	Ser	His	Trp	Lys	Lys	Thr	Pro	Val	Val	Leu	Lys	115	120	125	
Ala	Thr	Ala	Gly	Leu	Arg	Leu	Leu	Pro	Glu	His	Lys	Ala	Lys	Ala	Leu	130	135	140	
Leu	Phe	Glu	Val	Lys	Glu	Ile	Phe	Arg	Lys	Ser	Pro	Phe	Leu	Val	Pro	145	150	155	160
Lys	Gly	Ser	Val	Ser	Ile	Met	Asp	Gly	Ser	Asp	Glu	Gly	Ile	Leu	Ala	165	170	175	
Trp	Val	Thr	Val	Asn	Phe	Leu	Thr	Gly	Gln	Leu	His	Gly	His	Arg	Gln	180	185	190	
Glu	Thr	Val	Gly	Thr	Leu	Asp	Leu	Gly	Gly	Ala	Ser	Thr	Gln	Ile	Thr	195	200	205	
Phe	Leu	Pro	Gln	Phe	Glu	Lys	Thr	Leu	Glu	Gln	Thr	Pro	Arg	Gly	Tyr	210	215	220	
Leu	Thr	Ser	Phe	Glu	Met	Phe	Asn	Ser	Thr	Tyr	Lys	Leu	Tyr	Thr	His	225	230	235	240
Ser	Tyr	Leu	Gly	Phe	Gly	Leu	Lys	Ala	Ala	Arg	Leu	Ala	Thr	Leu	Gly	245	250	255	
Ala	Leu	Glu	Thr	Glu	Gly	Thr	Asp	Gly	His	Thr	Phe	Arg	Ser	Ala	Cys	260	265	270	
Leu	Pro	Arg	Trp	Leu	Glu	Ala	Glu	Trp	Ile	Phe	Gly	Gly	Val	Lys	Tyr	275	280	285	
Gln	Tyr	Gly	Gly	Asn	Gln	Glu	Gly	Glu	Val	Gly	Phe	Glu	Pro	Cys	Tyr	290	295	300	
Ala	Glu	Val	Leu	Arg	Val	Val	Arg	Gly	Lys	Leu	His	Gln	Pro	Glu	Glu	305	310	315	320
Val	Gln	Arg	Gly	Ser	Phe	Tyr	Ala	Phe	Ser	Tyr	Tyr	Tyr	Asp	Arg	Ala	325	330	335	
Val	Asp	Thr	Asp	Met	Ile	Asp	Tyr	Glu	Lys	Gly	Gly	Ile	Leu	Lys	Val	340	345	350	
Glu	Asp	Phe	Glu	Arg	Lys	Ala	Arg	Glu	Val	Cys	Asp	Asn	Leu	Glu	Asn	355	360	365	

ctc ttg gag gtg gcc aaa gac tcg atc ccc aga agc cac tgg gaa agg	567
Leu Leu Glu Val Ala Lys Asp Ser Ile Pro Arg Ser His Trp Glu Arg	
110 115 120	
acc ccg gtg gtt ctg aaa gca acg gcc gga ctc cgt ttg ctg cct gag	615
Thr Pro Val Val Leu Lys Ala Thr Ala Gly Leu Arg Leu Leu Pro Glu	
125 130 135	
cag aaa gcc caq gct ctg ctc ttg gag gta gag gag atc ttc aag aat	663
Gln Lys Ala Gln Ala Leu Leu Leu Glu Val Glu Glu Ile Phe Lys Asn	
140 145 150	
tca cct ttc ctg gtc cca gat ggc agc gtt agc atc atg gat ggg tcc	711
Ser Pro Phe Leu Val Pro Asp Gly Ser Val Ser Ile Met Asp Gly Ser	
155 160 165	
tat gaa ggc ata cta gcc tgg gtt acc gtg aac ttt cta aca ggt cag	759
Tyr Glu Gly Ile Leu Ala Trp Val Thr Val Asn Phe Leu Thr Gly Gln	
170 175 180 185	
ctg cat ggt cgt ggc cag gag act gtg ggg acc ctt gac ctg ggg ggt	807
Leu His Gly Arg Gly Gln Glu Thr Val Gly Thr Leu Asp Leu Gly Gly	
190 195 200	
gcc tcc acc caa atc acg ttt cta ccc cag ttt gag aaa acc ctg gaa	855
Ala Ser Thr Gln Ile Thr Phe Leu Pro Gln Phe Glu Lys Thr Leu Glu	
205 210 215	
caa aca cct agg ggc tac ctc act tcc ttt gag atg ttt aac agc act	903
Gln Thr Pro Arg Gly Tyr Leu Thr Ser Phe Glu Met Phe Asn Ser Thr	
220 225 230	
ttt aag ctc tat aca cat agt tac ttg gga ttt gga ctg aaa gct gca	951
Phe Lys Leu Tyr Thr His Ser Tyr Leu Gly Phe Gly Leu Lys Ala Ala	
235 240 245	
aga ctg gca act ctg gga gcc ctg gaa gca aaa ggg act gat gga cat	999
Arg Leu Ala Thr Leu Gly Ala Leu Glu Ala Lys Gly Thr Asp Gly His	
250 255 260 265	
acg ttt cga agt gcc tgt tta cca aga tgg ttg gaa gca gag tgg atc	1047
Thr Phe Arg Ser Ala Cys Leu Pro Arg Trp Leu Glu Ala Glu Trp Ile	
270 275 280	
ttt ggg ggt gtg aaa tac cag tat ggt ggt aac caa gaa ggg gag atg	1095
Phe Gly Gly Val Lys Tyr Gln Tyr Gly Gly Asn Gln Glu Gly Glu Met	
285 290 295	
ggc ttt gaa ccc tgc tat gcg gaa gtg ctg agg gta gta cag ggg aaa	1143
Gly Phe Glu Pro Cys Tyr Ala Glu Val Leu Arg Val Val Gln Gly Lys	
300 305 310	
ctt cac cag cca gaa gaa gtc cga gga agc gcc ttc tac gct ttc tct	1191
Leu His Gln Pro Glu Glu Val Arg Gly Ser Ala Phe Tyr Ala Phe Ser	
315 320 325	

tac tac tac gat cga gcc gct gac aca cac ttg atc gat tat gaa aag	1239
Tyr Tyr Tyr Asp Arg Ala Ala Asp Thr His Leu Ile Asp Tyr Glu Lys	
330 335 340 345	
ggc ggg gtt tta aaa gtt gaa gat ttt gaa aga aaa gcc aga gaa gtg	1287
Gly Gly Val Leu Lys Val Glu Asp Phe Glu Arg Lys Ala Arg Glu Val	
350 355 360	
tgt gac aac ttg ggg agc ttc tcc tcg ggc agt cct ttc ctc tgc atg	1335
Cys Asp Asn Leu Gly Ser Phe Ser Ser Gly Ser Pro Phe Leu Cys Met	
365 370 375	
gac ctc act tac atc aca gcc ctg ttg aaa gat ggt ttg ggc ttt gcc	1383
Asp Leu Thr Tyr Ile Thr Ala Leu Leu Lys Asp Gly Leu Gly Phe Ala	
380 385 390	
gaa cgg cac cct ctt aca gct cac aaa gaa agt gaa caa cat aga gac	1431
Glu Arg His Pro Leu Thr Ala His Lys Glu Ser Glu Gln His Arg Asp	
395 400 405	
tgg ttg ggc ctt ggg ggc cac ctt tca cct gct cca gtc tct ggg cat	1479
Trp Leu Gly Leu Gly Gly His Leu Ser Pro Ala Pro Val Ser Gly His	
410 415 420 425	
cac cag ctg agg cca agc tcc acc tct gaa gcc tgc att tct gaa cca	1527
His Gln Leu Arg Pro Ser Ser Thr Ser Glu Ala Cys Ile Ser Glu Pro	
430 435 440	
gtt ttc tca cag gaa ggc gtg gac tca gag aca ttt tct gac ctc tct	1575
Val Phe Ser Gln Glu Gly Val Asp Ser Glu Thr Phe Ser Asp Leu Ser	
445 450 455	
gga aaa gcc tgg ccc gaa acc cgt taactggttt tataaggagg gaggggtttt	1629
Gly Lys Ala Trp Pro Glu Thr Arg	
460 465	
tagatgagtc ttgctcttga gcctagtgat ttgggcttca atgatttgca catctaagt	1689
gaatagctcc taaccacttg gtgggtgcat ggctggcacc agactgtaaa tcttttggga	1749
ttctttgtac agagtctgc aaaggaaaaa agagaaaagg tttggaactc catgctagat	1809
tgcgagttca gagacaggtc cctggggacc aaagaacaat ctcgtttcaa cccttggtatg	1869
cctcattgct ttgaatggat tcatttttgc ttataagctg atttactgaa atcccataac	1929
ccatcaatgc tgtaattttt tttcttcccta cccttattac attccctacc ctaaaagcct	1989
gggggaaata cctgggttttg cttcccatct ataattgaga aagagggggg aaaagatact	2049
gtattagaat ttgtgtgatc ctgtggcaca atagatcaac caaccattt aaagcttaaa	2109
aaaaaaaaa	2119

<210> 8
 <211> 465
 <212> PRT

<213> Mus musculus

<400> 8

Met Ala Thr Ser Trp Gly Ala Val Phe Met Leu Ile Ile Ala Cys Val
1 5 10 15
Gly Ser Thr Val Phe Tyr Arg Glu Gln Gln Thr Trp Phe Glu Gly Val
20 25 30
Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Gly Thr Phe Tyr
35 40 45
Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Ala Arg Ile His Val Tyr
50 55 60
Thr Phe Val Gln Lys Thr Ala Gly Gln Leu Pro Phe Leu Glu Gly Glu
65 70 75 80
Ile Phe Asp Ser Val Lys Pro Gly Leu Ser Ala Phe Val Asp Gln Pro
85 90 95
Lys Gln Gly Ala Glu Thr Val Gln Glu Leu Leu Glu Val Ala Lys Asp
100 105 110
Ser Ile Pro Arg Ser His Trp Glu Arg Thr Pro Val Val Leu Lys Ala
115 120 125
Thr Ala Gly Leu Arg Leu Leu Pro Glu Gln Lys Ala Gln Ala Leu Leu
130 135 140
Leu Glu Val Glu Glu Ile Phe Lys Asn Ser Pro Phe Leu Val Pro Asp
145 150 155 160
Gly Ser Val Ser Ile Met Asp Gly Ser Tyr Glu Gly Ile Leu Ala Trp
165 170 175
Val Thr Val Asn Phe Leu Thr Gly Gln Leu His Gly Arg Gly Gln Glu
180 185 190
Thr Val Gly Thr Leu Asp Leu Gly Gly Ala Ser Thr Gln Ile Thr Phe
195 200 205
Leu Pro Gln Phe Glu Lys Thr Leu Glu Gln Thr Pro Arg Gly Tyr Leu
210 215 220
Thr Ser Phe Glu Met Phe Asn Ser Thr Phe Lys Leu Tyr Thr His Ser
225 230 235 240
Tyr Leu Gly Phe Gly Leu Lys Ala Ala Arg Leu Ala Thr Leu Gly Ala
245 250 255
Leu Glu Ala Lys Gly Thr Asp Gly His Thr Phe Arg Ser Ala Cys Leu
260 265 270
Pro Arg Trp Leu Glu Ala Glu Trp Ile Phe Gly Gly Val Lys Tyr Gln
275 280 285

Tyr Gly Gly Asn Gln Glu Gly Glu Met Gly Phe Glu Pro Cys Tyr Ala
 290 295 300
 Glu Val Leu Arg Val Val Gln Gly Lys Leu His Gln Pro Glu Glu Val
 305 310 315 320
 Arg Gly Ser Ala Phe Tyr Ala Phe Ser Tyr Tyr Tyr Asp Arg Ala Ala
 325 330 335
 Asp Thr His Leu Ile Asp Tyr Glu Lys Gly Gly Val Leu Lys Val Glu
 340 345 350
 Asp Phe Glu Arg Lys Ala Arg Glu Val Cys Asp Asn Leu Gly Ser Phe
 355 360 365
 Ser Ser Gly Ser Pro Phe Leu Cys Met Asp Leu Thr Tyr Ile Thr Ala
 370 375 380
 Leu Leu Lys Asp Gly Leu Gly Phe Ala Glu Arg His Pro Leu Thr Ala
 385 390 395 400
 His Lys Glu Ser Glu Gln His Arg Asp Trp Leu Gly Leu Gly Gly His
 405 410 415
 Leu Ser Pro Ala Pro Val Ser Gly His His Gln Leu Arg Pro Ser Ser
 420 425 430
 Thr Ser Glu Ala Cys Ile Ser Glu Pro Val Phe Ser Gln Glu Gly Val
 435 440 445
 Asp Ser Glu Thr Phe Ser Asp Leu Ser Gly Lys Ala Trp Pro Glu Thr
 450 455 460
 Arg
 465

<210> 9
 <211> 428
 <212> PRT
 <213> Homo sapiens

<400> 9
 Met Ala Thr Ser Trp Gly Thr Val Phe Phe Met Leu Val Val Ser Cys
 1 5 10 15
 Val Cys Ser Ala Val Ser His Arg Asn Gln Gln Thr Trp Phe Glu Gly
 20 25 30
 Ile Phe Leu Ser Ser Met Cys Pro Ile Asn Val Ser Ala Ser Thr Leu
 35 40 45
 Tyr Gly Ile Met Phe Asp Ala Gly Ser Thr Gly Thr Arg Ile His Val
 50 55 60
 Tyr Thr Phe Val Gln Lys Met Pro Gly Gln Leu Pro Ile Leu Glu Gly
 65 70 75 80

Glu	Val	Phe	Asp	Ser	Val	Lys	Pro	Gly	Leu	Ser	Ala	Phe	Val	Asp	Gln	85	90	95
Pro	Lys	Gln	Gly	Ala	Glu	Thr	Val	Gln	Gly	Leu	Leu	Glu	Val	Ala	Lys	100	105	110
Asp	Ser	Ile	Pro	Arg	Ser	His	Trp	Lys	Lys	Thr	Pro	Val	Val	Leu	Lys	115	120	125
Ala	Thr	Ala	Gly	Leu	Arg	Leu	Leu	Pro	Glu	His	Lys	Ala	Lys	Ala	Leu	130	135	140
Leu	Phe	Glu	Val	Lys	Glu	Ile	Phe	Arg	Lys	Ser	Pro	Phe	Leu	Val	Pro	145	150	155
Lys	Gly	Ser	Val	Ser	Ile	Met	Asp	Gly	Ser	Asp	Glu	Gly	Ile	Leu	Ala	165	170	175
Trp	Val	Thr	Val	Asn	Phe	Leu	Thr	Gly	Gln	Leu	His	Gly	His	Arg	Gln	180	185	190
Glu	Thr	Val	Gly	Thr	Leu	Asp	Leu	Gly	Gly	Ala	Ser	Thr	Gln	Ile	Thr	195	200	205
Phe	Leu	Pro	Gln	Phe	Glu	Lys	Thr	Leu	Glu	Gln	Thr	Pro	Arg	Gly	Tyr	210	215	220
Leu	Thr	Ser	Phe	Glu	Met	Phe	Asn	Ser	Thr	Tyr	Lys	Leu	Tyr	Thr	His	225	230	235
Ser	Tyr	Leu	Gly	Phe	Gly	Leu	Lys	Ala	Ala	Arg	Leu	Ala	Thr	Leu	Gly	245	250	255
Ala	Leu	Glu	Thr	Glu	Gly	Thr	Asp	Gly	His	Thr	Phe	Arg	Ser	Ala	Cys	260	265	270
Leu	Pro	Arg	Trp	Leu	Glu	Ala	Glu	Trp	Ile	Phe	Gly	Gly	Val	Lys	Tyr	275	280	285
Gln	Tyr	Gly	Gly	Asn	Gln	Glu	Gly	Glu	Val	Gly	Phe	Glu	Pro	Cys	Tyr	290	295	300
Ala	Glu	Val	Leu	Arg	Val	Val	Arg	Gly	Lys	Leu	His	Gln	Pro	Glu	Glu	305	310	315
Val	Gln	Arg	Gly	Ser	Phe	Tyr	Ala	Phe	Ser	Tyr	Tyr	Tyr	Asp	Arg	Ala	325	330	335
Val	Asp	Thr	Asp	Met	Ile	Asp	Tyr	Glu	Lys	Gly	Gly	Ile	Leu	Lys	Val	340	345	350
Glu	Asp	Phe	Glu	Arg	Lys	Ala	Arg	Glu	Val	Cys	Asp	Asn	Leu	Glu	Asn	355	360	365
Phe	Thr	Ser	Gly	Ser	Pro	Phe	Leu	Cys	Met	Asp	Leu	Ser	Tyr	Ile	Thr	370	375	380

Ala Leu Leu Lys Asp Gly Phe Gly Phe Ala Asp Ser Thr Val Leu Gln
 385 390 395 400

Leu Thr Lys Lys Val Asn Asn Ile Glu Thr Gly Trp Ala Leu Gly Ala
 405 410 415

Thr Phe His Leu Leu Gln Ser Leu Gly Ile Ser His
 420 425

<210> 10
 <211> 455
 <212> PRT
 <213> P. sativum

<400> 10
 Met Glu Leu Leu Ile Lys Leu Ile Thr Phe Leu Leu Phe Ser Met Pro
 1 5 10 15

Ala Ile Thr Ser Ser Gln Tyr Leu Gly Asn Asn Leu Leu Thr Ser Arg
 20 25 30

Lys Ile Phe Leu Lys Gln Glu Glu Ile Ser Ser Tyr Ala Val Val Phe
 35 40 45

Asp Ala Gly Ser Thr Gly Ser Arg Ile His Val Tyr His Phe Asn Gln
 50 55 60

Asn Leu Asp Leu Leu His Ile Gly Lys Gly Val Glu Tyr Tyr Asn Lys
 65 70 75 80

Ile Thr Pro Gly Leu Ser Ser Tyr Ala Asn Asn Pro Glu Gln Ala Ala
 85 90 95

Lys Ser Leu Ile Pro Leu Leu Glu Gln Ala Glu Asp Val Val Pro Asp
 100 105 110

Asp Leu Gln Pro Lys Thr Pro Val Arg Leu Gly Ala Thr Ala Gly Leu
 115 120 125

Arg Leu Leu Asn Gly Asp Ala Ser Glu Lys Ile Leu Gln Ser Val Arg
 130 135 140

Asp Met Leu Ser Asn Arg Ser Thr Phe Asn Val Gln Pro Asp Ala Val
 145 150 155 160

Ser Ile Ile Asp Gly Thr Gln Glu Gly Ser Tyr Leu Trp Val Thr Val
 165 170 175

Asn Tyr Ala Leu Gly Asn Leu Gly Lys Lys Tyr Thr Lys Thr Val Gly
 180 185 190

Val Ile Asp Leu Gly Gly Gly Ser Val Gln Met Ala Tyr Ala Val Ser
 195 200 205

Lys Lys Thr Ala Lys Asn Ala Pro Lys Val Ala Asp Gly Asp Asp Pro
 210 215 220

Tyr Ile Lys Lys Val Val Leu Lys Gly Ile Pro Tyr Asp Leu Tyr Val
 225 230 235 240
 His Ser Tyr Leu His Phe Gly Arg Glu Ala Ser Arg Ala Glu Ile Leu
 245 250 255
 Lys Leu Thr Pro Arg Ser Pro Asn Pro Cys Leu Leu Ala Gly Phe Asn
 260 265 270
 Gly Ile Tyr Thr Tyr Ser Gly Glu Glu Phe Lys Ala Thr Ala Tyr Thr
 275 280 285
 Ser Gly Ala Asn Phe Asn Lys Cys Lys Asn Thr Ile Arg Lys Ala Leu
 290 295 300
 Lys Leu Asn Tyr Pro Cys Pro Tyr Gln Asn Cys Thr Phe Gly Gly Ile
 305 310 315 320
 Trp Asn Gly Gly Gly Gly Asn Gly Gln Lys Asn Leu Phe Ala Ser Ser
 325 330 335
 Ser Phe Phe Tyr Leu Pro Glu Asp Thr Gly Met Val Asp Ala Ser Thr
 340 345 350
 Pro Asn Phe Ile Leu Arg Pro Val Asp Ile Glu Thr Lys Ala Lys Glu
 355 360 365
 Ala Cys Ala Leu Asn Phe Glu Asp Ala Lys Ser Thr Tyr Pro Phe Leu
 370 375 380
 Asp Lys Lys Asn Val Ala Ser Tyr Val Cys Met Asp Leu Ile Tyr Gln
 385 390 395 400
 Tyr Val Leu Leu Val Asp Gly Phe Gly Leu Asp Pro Leu Gln Lys Ile
 405 410 415
 Thr Ser Gly Lys Glu Ile Glu Tyr Gln Asp Ala Ile Val Glu Ala Ala
 420 425 430
 Trp Pro Leu Gly Asn Ala Val Glu Ala Ile Ser Ala Leu Pro Lys Phe
 435 440 445
 Glu Arg Leu Met Tyr Phe Val
 450 455

<210> 11
 <211> 454
 <212> PRT
 <213> Solanum tuberosum

<400> 11
 Met Leu Asn Gln Asn Ser His Phe Ile Phe Ile Ile Leu Ala Ile Phe
 1 5 10 15
 Leu Val Leu Pro Leu Ser Leu Leu Ser Lys Asn Val Asn Ala Gln Ile
 20 25 30

Pro	Leu	Arg	Arg	His	Leu	Leu	Ser	His	Glu	Ser	Glu	His	Tyr	Ala	Val	35	40	45	
Ile	Phe	Asp	Ala	Gly	Ser	Thr	Gly	Ser	Arg	Val	His	Val	Phe	Arg	Phe	50	55	60	
Asp	Glu	Lys	Leu	Gly	Leu	Leu	Pro	Ile	Gly	Asn	Asn	Ile	Glu	Tyr	Phe	65	70	75	80
Met	Ala	Thr	Glu	Pro	Gly	Leu	Ser	Ser	Tyr	Ala	Glu	Asp	Pro	Lys	Ala	85	90	95	
Ala	Ala	Asn	Ser	Leu	Glu	Pro	Leu	Leu	Asp	Gly	Ala	Glu	Gly	Val	Val	100	105	110	
Pro	Gln	Glu	Leu	Gln	Ser	Glu	Thr	Pro	Leu	Glu	Leu	Gly	Ala	Thr	Ala	115	120	125	
Gly	Leu	Arg	Met	Leu	Lys	Gly	Asp	Ala	Ala	Glu	Lys	Ile	Leu	Gln	Ala	130	135	140	
Val	Arg	Asn	Leu	Val	Lys	Asn	Gln	Ser	Thr	Phe	His	Ser	Lys	Asp	Gln	145	150	155	160
Trp	Val	Thr	Ile	Leu	Asp	Gly	Thr	Gln	Glu	Gly	Ser	Tyr	Met	Trp	Ala	165	170	175	
Ala	Ile	Asn	Tyr	Leu	Leu	Gly	Asn	Leu	Gly	Lys	Asp	Tyr	Lys	Ser	Thr	180	185	190	
Thr	Ala	Thr	Ile	Asp	Leu	Gly	Gly	Gly	Ser	Val	Gln	Met	Ala	Tyr	Ala	195	200	205	
Ile	Ser	Asn	Glu	Gln	Phe	Ala	Lys	Ala	Pro	Gln	Asn	Glu	Asp	Gly	Glu	210	215	220	
Pro	Tyr	Val	Gln	Gln	Lys	His	Leu	Met	Ser	Lys	Asp	Tyr	Asn	Leu	Tyr	225	230	235	240
Val	His	Ser	Tyr	Leu	Asn	Tyr	Gly	Gln	Leu	Ala	Gly	Arg	Ala	Glu	Ile	245	250	255	
Phe	Lys	Ala	Ser	Arg	Asn	Glu	Ser	Asn	Pro	Cys	Ala	Leu	Glu	Gly	Cys	260	265	270	
Asp	Gly	Tyr	Tyr	Ser	Tyr	Gly	Gly	Val	Asp	Tyr	Lys	Val	Lys	Ala	Pro	275	280	285	
Lys	Lys	Gly	Ser	Ser	Trp	Lys	Arg	Cys	Arg	Arg	Leu	Thr	Arg	His	Ala	290	295	300	
Leu	Lys	Ile	Asn	Ala	Lys	Cys	Asn	Ile	Glu	Glu	Cys	Thr	Phe	Asn	Gly	305	310	315	320
Val	Trp	Asn	Gly	Gly	Gly	Gly	Asp	Gly	Gln	Lys	Asn	Ile	His	Ala	Ser	325	330	335	

Ser Phe Phe Tyr Asp Ile Gly Ala Gln Val Gly Ile Val Asp Thr Lys
 340 345 350

Phe Pro Ser Ala Leu Ala Lys Pro Ile Gln Tyr Leu Asn Ala Ala Lys
 355 360 365

Val Ala Cys Gln Thr Asn Val Ala Asp Ile Lys Ser Ile Phe Pro Lys
 370 375 380

Thr Gln Asp Arg Asn Ile Pro Tyr Leu Cys Met Asp Leu Ile Tyr Glu
 385 390 395 400

Tyr Thr Leu Leu Val Asp Gly Phe Gly Leu Asn Pro His Lys Glu Ile
 405 410 415

Thr Val Ile His Asp Val Gln Tyr Lys Asn Tyr Leu Val Gly Ala Ala
 420 425 430

Trp Pro Leu Gly Cys Ala Ile Asp Leu Val Ser Ser Thr Thr Asn Lys
 435 440 445

Ile Arg Val Ala Ser Ser
 450

<210> 12

<211> 473

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 12

Lys Thr Pro Glu Asp Ile Ser Ile Ile Pro Val Asn Asp Glu Pro Gly
 1 5 10 15

Tyr Leu Gln Asp Ser Lys Thr Glu Gln Asn Tyr Pro Glu Leu Ala Asp
 20 25 30

Ala Val Lys Ser Gln Thr Ser Gln Thr Cys Ser Glu Glu His Lys Tyr
 35 40 45

Val Ile Met Ile Asp Ala Gly Ser Thr Gly Ser Arg Val His Ile Tyr
 50 55 60

Lys Phe Asp Val Cys Thr Ser Pro Pro Thr Leu Leu Asp Glu Lys Phe
 65 70 75 80

Asp Met Leu Glu Pro Gly Leu Ser Ser Phe Asp Thr Asp Ser Val Gly
 85 90 95

Ala Ala Asn Ser Leu Asp Pro Leu Leu Lys Val Ala Met Asn Tyr Val
 100 105 110

Pro Ile Lys Ala Arg Ser Cys Thr Pro Val Ala Val Lys Ala Thr Ala
 115 120 125

Gly Leu Arg Leu Leu Gly Asp Ala Lys Ser Ser Lys Ile Leu Ser Ala
 130 135 140

Val	Arg	Asp	His	Leu	Glu	Lys	Asp	Tyr	Pro	Phe	Pro	Val	Val	Glu	Gly	
145					150					155					160	
Asp	Gly	Val	Ser	Ile	Met	Gly	Gly	Asp	Glu	Glu	Gly	Val	Phe	Ala	Trp	
				165					170					175		
Ile	Thr	Thr	Asn	Tyr	Leu	Leu	Gly	Asn	Ile	Gly	Ala	Asn	Gly	Pro	Lys	
			180					185					190			
Leu	Pro	Thr	Ala	Ala	Val	Phe	Asp	Leu	Gly	Gly	Gly	Ser	Thr	Gln	Ile	
		195					200					205				
Val	Glu	Glu	Pro	Thr	Phe	Pro	Ile	Asn	Glu	Lys	Met	Val	Asp	Gly	Glu	
	210						215				220					
His	Lys	Phe	Asp	Leu	Lys	Phe	Gly	Asp	Glu	Asn	Tyr	Thr	Leu	Tyr	Gln	
225					230					235					240	
Phe	Ser	His	Leu	Gly	Tyr	Gly	Leu	Lys	Glu	Gly	Arg	Asn	Lys	Val	Asn	
			245						250					255		
Ser	Val	Leu	Val	Glu	Asn	Ala	Leu	Lys	Asp	Lys	Ile	Leu	Lys	Gly	Cys	
			260					265						270		
Asn	Thr	Lys	Thr	His	Cys	Leu	Ser	Ser	Pro	Cys	Leu	Pro	Pro	Lys	Val	
		275					280					285				
Asn	Ala	Thr	Asn	Glu	Lys	Val	Thr	Leu	Glu	Ser	Lys	Glu	Thr	Tyr	Thr	
	290					295					300					
Ile	Asp	Phe	Ile	Gly	Pro	Asp	Glu	Pro	Ser	Gly	Ala	Gln	Cys	Arg	Phe	
305					310					315					320	
Leu	Thr	Asp	Glu	Ile	Leu	Asn	Lys	Asp	Ala	Gln	Cys	Gln	Ser	Pro	Pro	
			325						330					335		
Cys	Ser	Phe	Asn	Gly	Val	His	Gln	Pro	Ser	Leu	Val	Arg	Thr	Phe	Lys	
			340					345					350			
Glu	Ser	Asn	Asp	Ile	Tyr	Ile	Phe	Ser	Tyr	Phe	Tyr	Asp	Arg	Thr	Thr	
	355						360					365				
Arg	Pro	Leu	Gly	Met	Pro	Leu	Ser	Phe	Thr	Leu	Asn	Glu	Leu	Asn	Asp	
	370					375					380					
Leu	Ala	Arg	Ile	Val	Cys	Lys	Gly	Glu	Glu	Thr	Trp	Asn	Ser	Val	Phe	
385					390					395					400	
Ser	Gly	Ile	Ala	Gly	Ser	Leu	Asp	Glu	Leu	Glu	Ser	Asp	Ser	His	Phe	
				405					410					415		
Cys	Leu	Asp	Leu	Ser	Phe	Gln	Val	Ser	Leu	Leu	His	Thr	Gly	Tyr	Asp	
		420						425					430			
Ile	Pro	Leu	Gln	Arg	Glu	Leu	Arg	Thr	Gly	Lys	Lys	Ile	Ala	Asn	Lys	
		435					440					445				

Glu Ile Gly Trp Cys Leu Gly Ala Ser Leu Pro Leu Leu Lys Ala Asp
 450 455 460

Asn Trp Lys Cys Lys Ile Gln Ser Ala
 465 470

<210> 13
 <211> 153
 <212> PRT
 <213> Homo sapiens

<400> 13
 Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr
 1 5 10 15
 Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
 20 25 30
 Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
 35 40 45
 Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
 50 55 60
 Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
 65 70 75 80
 Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
 85 90 95
 Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
 100 105 110
 Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
 115 120 125
 Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
 130 135 140
 Lys Thr Arg Trp Phe Ser Ile Val Pro
 145 150

<210> 14
 <211> 154
 <212> PRT
 <213> Rattus norvegicus

<400> 14
 Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Asn Leu
 1 5 10 15
 Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val
 20 25 30
 Gln Leu Leu Glu Glu Cys Gln Val Lys Gly Pro Gly Ile Ser Lys Tyr
 35 40 45

Ala Gln Lys Thr Asp Glu Ile Ala Ala Tyr Leu Ala Glu Cys Met Lys
50 55 60

Met Ser Thr Glu Arg Ile Pro Ala Ser Lys Gln His Gln Thr Pro Val
65 70 75 80

Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Lys
85 90 95

Gln Ser Ala Asp Glu Val Leu Ala Ala Val Ser Arg Ser Leu Lys Ser
100 105 110

Tyr Pro Phe Asp Phe Gln Gly Ala Lys Ile Ile Thr Gly Gln Glu Glu
115 120 125

Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Arg Phe Thr
130 135 140

Gln Glu Gln Ser Trp Leu Asn Phe Ile Ser
145 150

<210> 15
<211> 153
<212> PRT
<213> Homo sapiens

<400> 15
Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Met Phe
1 5 10 15

Ile Tyr Lys Trp Pro Ala Asp Lys Glu Asn Asp Thr Gly Ile Val Gly
20 25 30

Gln His Ser Ser Cys Asp Val Pro Gly Gly Gly Ile Ser Ser Tyr Ala
35 40 45

Asp Asn Pro Ser Gly Ala Ser Gln Ser Leu Val Gly Cys Leu Glu Gln
50 55 60

Ala Leu Gln Asp Val Pro Lys Glu Arg His Ala Gly Thr Pro Leu Tyr
65 70 75 80

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Asn Leu Thr Asn Pro Glu
85 90 95

Ala Ser Thr Ser Val Leu Met Ala Val Thr His Thr Leu Thr Gln Tyr
100 105 110

Pro Phe Asp Phe Arg Gly Ala Arg Ile Leu Ser Gly Gln Glu Glu Gly
115 120 125

Val Phe Gly Trp Val Thr Ala Asn Tyr Leu Leu Glu Asn Phe Ile Lys
130 135 140

Tyr Gly Trp Val Gly Arg Trp Phe Arg
145 150

<210> 16
 <211> 150
 <212> PRT
 <213> Gallus gallus

<400> 16
 Phe Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ala Val
 1 5 10 15
 Phe Ile Tyr Lys Trp Pro Ala Asp Lys Glu Asn Asp Thr Gly Val Val
 20 25 30
 Ser Glu His Ser Met Cys Asp Val Glu Gly Pro Gly Ile Ser Ser Tyr
 35 40 45
 Ser Ser Lys Pro Pro Ala Ala Gly Lys Ser Leu Glu His Cys Leu Ser
 50 55 60
 Gln Ala Met Arg Asp Val Pro Lys Glu Lys His Ala Asp Thr Pro Leu
 65 70 75 80
 Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Thr Ile Ala Asp Pro
 85 90 95
 Pro Ser Gln Thr Cys Leu Ser Ala Val Met Ala Thr Leu Lys Ser Tyr
 100 105 110
 Pro Phe Asp Phe Gly Gly Ala Lys Ile Leu Ser Gly Glu Glu Glu Gly
 115 120 125
 Val Phe Gly Trp Ile Thr Ala Asn Tyr Leu Leu Glu Asn Phe Ile Lys
 130 135 140
 Arg Gly Trp Leu Gly Glu
 145 150

<210> 17
 <211> 148
 <212> PRT
 <213> Caenorhabditis elegans

<400> 17
 Ile Lys Tyr Gly Val Ile Cys Asp Ala Gly Ser Ser Gly Thr Arg Leu
 1 5 10 15
 Phe Val Tyr Thr Leu Lys Pro Leu Ser Gly Gly Leu Thr Asn Ile Asp
 20 25 30
 Thr Leu Ile His Glu Ser Glu Pro Val Val Lys Lys Val Thr Pro Gly
 35 40 45
 Leu Ser Ser Phe Gly Asp Lys Pro Glu Gln Val Val Glu Tyr Leu Thr
 50 55 60
 Pro Leu Leu Arg Phe Ala Glu Glu His Ile Pro Tyr Glu Gln Leu Gly
 65 70 75 80

Glu Thr Asp Leu Leu Ile Phe Ala Thr Ala Gly Met Arg Leu Leu Pro
85 90 95

Glu Ala Gln Lys Asp Ala Ile Ile Lys Asn Leu Gln Asn Gly Leu Lys
100 105 110

Ser Val Thr Ala Leu Arg Val Ser Asp Ser Asn Ile Arg Ile Ile Asp
115 120 125

Gly Ala Trp Glu Gly Ile Tyr Ser Trp Ile Ala Val Asn Tyr Ile Leu
130 135 140

Gly Arg Phe Asp
145

<210> 18
<211> 10
<212> RNA
<213> Mus musculus

<400> 18
aagaauaugg 10

<210> 19
<211> 10
<212> RNA
<213> Vertebrate

<400> 19
gccgccaugg 10

<210> 20
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 20
ccagactgta aatcttttgg 20

<210> 21
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 21
agggaatgta ataagggtag 20

<210> 22
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 22
ctgcttgagt gacgtctctg 20

<210> 23
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 23
cacatgaggt tcagctcgtg 20

<210> 24
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 24
gtgaagtggc tgccttcagg 20

<210> 25
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 25
cctttgactc gggactccag 20

<210> 26
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 26
gaactgctgc ctaaccactc 20

<210> 27
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 27
attgatgggt cttgggattg c 21

<210> 28
<211> 10
<212> RNA
<213> Homo sapiens

<400> 28
augugaauga 10

<210> 29
<211> 10
<212> RNA
<213> Homo sapiens

<400> 29
acaaggauga 10